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SYSTEM AND METHOD FOR CHARACTERIZING A SAMPLE BY LOW-FREQUENCY SPECTRA

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] This application is a continuation-in-part, and claims the benefit of, U.S. Patent Application No. 10/112,927, filed March 29, 2002, entitled APPARATUS AND METHOD FOR MEASURING MOLECULAR ELECTROMAGNETIC SIGNALS WITH A SQUID DEVICE AND STOCHASTIC RESONANCE TO MEASURE LOW-THRESHOLD SIGNALS (Attorney Docket No. 38547.8007.US00), International Patent Application No. PCT/US03/09544, filed March 28, 2003, entitled SYSTEM AND METHOD FOR CHARACTERIZING A SAMPLE BY LOW-FREQUENCY SPECTRA (Attorney Docket No. 38547.8005.WO00), and International Patent Application No. PCT/US03/11834, filed April 18, 2003, entitled SYSTEM AND METHOD FOR SAMPLE DETECTION BASED ON LOW-FREQUENCY SPECTRAL COMPONENTS (Attorney Docket No. 38547.8006.WO00), all incorporated herein by reference.

BACKGROUND

[0002] There are a variety of spectroscopic tools for characterizing atomic or molecular compound. These include, but are not limited to, x-ray, UV, visible-light, infrared and microwave spectroscopy, and nuclear and electron spin resonance (NMR and ESR) spectroscopy. In general, spectroscopic tools are useful for at least four different type of chemical-analytical problems: first, to characterize an atomic and molecular compound according to its spectrographic features, e.g., spectral components; second, to determine the atomic composition of a compound, according to the spectral characteristics of atoms making up the compound; third, to determine 2-D or 3-D conformation of a molecular compound according to the spectral characteristic of atom-atom interactions in the compound;